

Chapter 3

Alternatives

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Alternatives

This section of the Supplemental EIS provides a brief summary description and update of the alternatives that were analyzed and presented in Chapter 2 of the Final EIS, as well as information on alternatives that have been evaluated since publication of the Final EIS.

3.1 Summary of Alternatives Presented in Final EIS

In the Legacy Parkway Final EIS (Federal Highway Administration et al. 2000), the analysis of alternatives presented in Section 2.1 identified all non-highway and highway alternatives that might reasonably meet the project purposes. The following sections summarize the evaluation of these alternatives as presented in Section 2.1 of the Final EIS.

3.1.1 Non-Highway Alternatives

Non-highway alternatives were evaluated to identify which were reasonable for additional consideration and review. The alternatives were evaluated based on factors that allowed determination of their feasibility/reasonableness and their potential to address the purpose and need. These factors included operational features, cost, constructability, safety, capacity, geography, and demographic characteristics. The following non-highway alternatives were evaluated in the Final EIS.

- Arterial roads.
- Transportation management strategies.
- Mass transit.

The analysis in the Final EIS determined that none of the non-highway alternatives provided enough capacity alone to meet the anticipated transportation demand in 2020. Although the non-highway alternatives provided some capacity, none (alone or even combined) was a reasonable alternative to evaluate further on a stand-alone basis. The Final EIS concluded that, if these alternatives were implemented, there would still be an unmet demand of 34 percent in the North Corridor in 2020 that would require additional high-capacity roadway improvements. Therefore, a need was identified to either widen I-15 or construct an additional high-capacity roadway such as Legacy Parkway, or both (see Section 2.1.5 and Figure 2-2 of the Final EIS). Nevertheless, the Final EIS assumed that all the non-highway alternatives would be implemented, and their contribution to meeting the capacity needs of the North Corridor was subtracted from the total corridor capacity demand to determine the need for additional highway improvements.

Based on updated travel demand modeling, this Supplemental EIS explains the future travel demands and capacity needs without using the concept of “unmet demand” that was useful for the Final EIS (see Appendix B). Based on the results of the updated travel demand analysis conducted for this Supplemental EIS, the conclusions reached in the Final EIS have not changed. As described in Section 3.2.2 of this Supplemental EIS, even with full implementation of arterial road improvements, transportation management strategies, and an expanded mass transit scenario developed for this Supplemental EIS, I-15 would still operate at LOS F in 2020.

3.1.2 Expansion of I-15

The Final EIS alternatives analysis also considered widening I-15 in the North Corridor from its current eight-lane configuration to meet the remaining demand not met by the non-highway alternatives. An analysis was performed to determine how many additional lanes could be added to I-15 before the efficiency of the highway diminished. The analysis determined that widening I-15 to more than ten lanes was not reasonable (see Section 2.1.6 of the Final EIS). The ten-lane I-15 option considered in both the Final EIS and the Supplemental EIS would include one high-occupancy vehicle (HOV) lane in each direction, and eight general-use lanes. This ten-lane I-15 alternative was then combined with the non-highway alternatives to determine how these options together would accommodate the anticipated capacity needs in the North Corridor. As shown in Figure 2-3 in the Final EIS, the analysis found that this combination would meet only 74 percent of the total anticipated demand in 2020 before exceeding peak-hour LOS D. The Final EIS therefore concluded that there was a need for an additional high-capacity highway, such as Legacy Parkway, in the North Corridor.

3.1.3 Development of the Shared Solution Concept for the North Corridor in the Final EIS

The Final EIS analysis concluded that there was a need for Legacy Parkway as part of the multi-component Shared Solution for the North Corridor as planned by regional authorities (see Section 2.1.7 of the Final EIS). The Shared Solution for the North Corridor as presented in the Final EIS included the following elements.

- Transportation management strategies (intelligent transportation systems [ITS], transportation systems management [TSM], and transportation demand management [TDM]).
- Improvements to various arterial roadways (considered as part of the future baseline).
- Additional transit service.
- Expansion of I-15.
- Legacy Parkway.

ITS, TSM, and TDM are operational and demand management strategies that reduce travel demand and improve the efficiency of the existing and proposed transportation systems without adding roadway capacity. At the time the Final EIS was prepared, the additional transit service portion of the Shared Solution was not allocated to particular modes, such as commuter rail or express bus, but rather left the transit mode allocations to the then on-going UTA evaluation. In addition to the elements listed above, build-out of arterial roads in accordance with the WFRC long range plan was also considered as part of the future baseline for the Shared Solution.

3.1.4 Legacy Parkway Alternatives Analyzed in Final EIS

Regional Alignments Considered

As part of the alternatives evaluation process in the Final EIS, regional alignments were developed for Legacy Parkway. A *regional alignment* is a broad geographic corridor in which specific project alternatives could be located. The Final EIS considered the following five regional alignments for Legacy Parkway (see Section 2.3 of the Final EIS). These alignments are shown in Figure 3-1.

- Antelope Island—from Salt Lake City to Antelope Island and north to I-15 near Kaysville.
- Trans-Bay—from Salt Lake City to Farmington Bay, with a bridge across the bay and a connection to I-15 near Kaysville.
- Farmington Bay—from Salt Lake City to Farmington Bay, with a causeway across the bay between West Bountiful and Farmington.
- Railroad—within the corridor of the Denver & Rio Grande Railroad (D&RG) or the Union Pacific Railroad (UPRR) from Salt Lake City to I-15 near Kaysville.
- Great Salt Lake—from Salt Lake City to I-15 near US-89, skirting the eastern side of Great Salt Lake.

These five regional alignments were evaluated at a corridor-planning level and compared by cost, impacts on wetlands, and environmental impacts on existing developed areas (see Section 2.3.2 of the Final EIS for detailed analysis). Based on the Final EIS evaluation, the Great Salt Lake regional alignment was selected. The Antelope Island, Trans-Bay, and Farmington Bay regional alignments were eliminated because of their high costs and impacts on wetlands. The railroad regional alignment was eliminated in the Final EIS because of its high costs and impacts on existing development. A detailed reevaluation of the D&RG regional corridor is presented in Section 2.2 of this Supplemental EIS.

Cost estimates for each of the regional alignment alternatives were developed as part of the Final EIS analysis. As part of the Supplemental EIS process, the cost estimates for the regional alignments were revised and updated. The revised, updated cost estimates are provided below in Table 3-1. The revised regional corridor cost estimates show that the costs associated with a highway in these corridors have increased since June 2000 when the cost estimates were prepared for the Final EIS. This increase can be attributed primarily to inflation between 2000 and 2004, refining the assumptions used for estimating costs, and applying a consistent methodology for estimating costs.

As shown in Table 3-1, the cost estimate for the UPRR regional alignment has decreased since the Final EIS. The costs for this regional alignment were estimated at a different level of detail for the Final EIS because the UPRR line was active, it was surrounded by petroleum processing plants, and alternatives within that regional alignment would require relocating a major refinery. Therefore, a macro-scale (less detailed) calculation was appropriate. For the Supplemental EIS, FHWA required a more detailed estimate for all the regional alignments.

Table 3-1 Updated Cost Estimates for Regional Alignments

Regional Alignment	Estimated Cost (in millions)	
	Final EIS 2000 ¹	Supplemental EIS 2004 ²
Antelope Island	\$1,400	\$1,525
Trans-Bay	\$1,460	\$1,868
Railroad		
D&RG	\$460	\$589 ³
UPRR	\$1,900	\$1,702
Great Salt Lake	\$300	\$439 ³
Farmington Bay	\$520	\$830

Notes:

¹ Source: Federal Highway Administration et al. 2000.

² Source: HDR Engineering, Inc. 2004.

³ Detailed cost estimates of specific alignments within the D&RG regional corridor and Alternative E within the Great Salt Lake regional corridor are presented in Chapter 2, Section 2.2, of this Supplemental EIS.

Estimates shown in Table 3-1 include construction materials, right-of-way, and approximated wetland mitigation. Preliminary engineering, stipends, and incentives are items specific to the construction contracts for Legacy Parkway and were not included in the estimates listed above or the estimates in the Final EIS. However, these items were included in the total cost of the Legacy Parkway project (\$451 million) that was documented after the Final EIS was published.

Logical Termini

An evaluation was performed for the Final EIS to determine the logical termini for the proposed Legacy Parkway. Based on that evaluation, the Final EIS concluded that the southern terminus should be at I-215 at 2100 North in Salt Lake City, and the northern terminus should be at the US-89/I-15 interchange in Farmington (see Section 2.2.1 of the Final EIS). The basic study area for developing potential alternatives has not changed since the Final EIS. Although the broad study area for the Final EIS included regional options west of the Salt Lake City airport, the Final EIS was clear that there were no plans in connection with Legacy Parkway to study or build such a road. That conclusion still applies for this Supplemental EIS. The decision not to have any transportation improvements in the vicinity of the Salt Lake City airport still stands.

3.1.5 Project Alternatives Analyzed in Detail in Final EIS

The Final EIS considered in detail the No-Build Alternative and four alignment alternatives within the Great Salt Lake regional alignment: Alternative A, Alternative B, Alternative C, and Alternative D (Final EIS Preferred Alternative). The four build alternatives are shown in Figure 3-2. All build alternatives analyzed in the Final EIS included a trail system for pedestrian, bicyclist, and equestrian use. In its 404(b)(1) alternatives evaluation, the Corps determined that removing the trail was not practicable, and the court decision upheld the Corps evaluation (*Utahns for Better Transportation et al. v. U.S. Department of Transportation et al.* [305 F.3d 1152 10th Cir. 2002 p. 64]). The five project alternatives, including the No-Build, are summarized below.

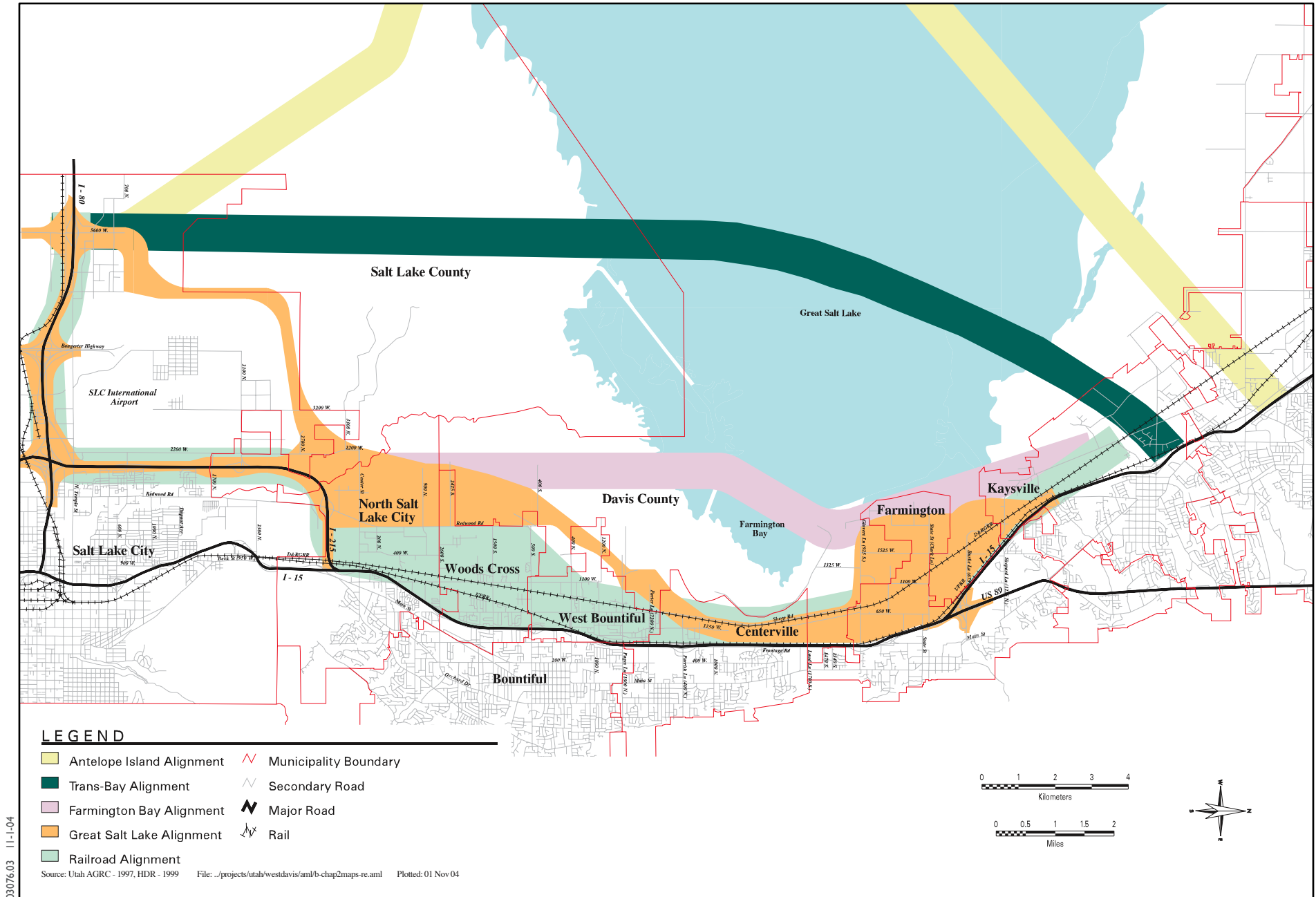
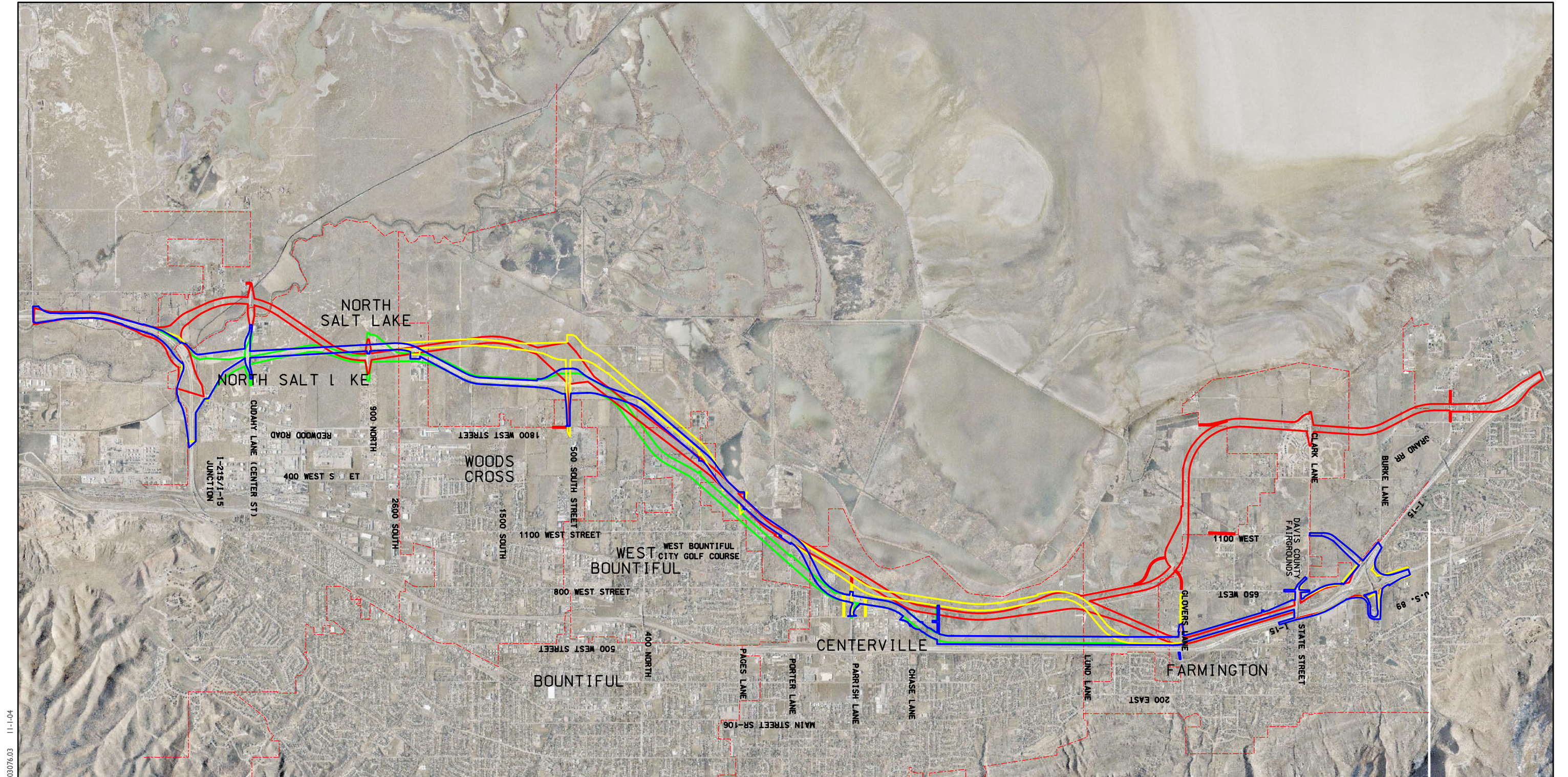


Figure 3-1
Regional Alignments Evaluated in the Final EIS



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LEGEND

- Alternative A
- Alternative B
- Alternative C
- Alternatives D & E
- - - Municipality Boundary

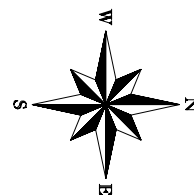
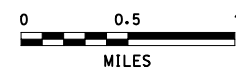


Figure 3-2
Build Alternatives Evaluated in the Final EIS
and Reevaluated in the Supplemental EIS

No-Build Alternative

The No-Build Alternative in the Final EIS included the I-15 North initial project, which added two general-use lanes in the median of I-15 from I-215 in North Salt Lake to US-89 in Farmington. The lanes were added to temporarily relieve congestion on I-15 until a permanent transportation solution is constructed. Construction of the I-15 North initial project was completed in 2001. The No-Build Alternative in the Final EIS also included I-15 South project, which was under construction at the time of publication of the Legacy Parkway Final EIS; the 600 North interchange was the northern boundary of the I-15 South project. Construction of the I-15 South project, including the 600 North interchange, was completed in 2002. However, the No-Build Alternative did not include either the Legacy North project or the full I-15 North expansion project, which would widen I-15 to ten lanes from 100 South in Salt Lake City to 200 North in Kaysville.

The No-Build Alternative also included various improvements to US-89 and existing arterials that were already included in the WFRC long range plan at the time of the Final EIS, additional programmed transit, and local transportation projects that were planned by local governments. The No-Build Alternative analyzed in the Final EIS included only the programmed commitments to transit. (See page 2-38 of the Final EIS.) Some of these improvements have been constructed since publication of the Final EIS. The No-Build Alternative assumed that Legacy Parkway would not be built.

Alternative A

Alternative A was the easternmost Legacy Parkway alternative presented in the Final EIS. It included two frontage roads. The southern terminus was located at the I-215/2100 North interchange in Salt Lake City. From the I-215 interchange, Alternative A proceeded north, crossed Center Street and 900 North in North Salt Lake, and proceeded to a point 0.6 km (0.3 mi) west of the intersection of 500 South and Redwood Road. The alignment then turned northeast for approximately 4.5 km (2.8 mi) before crossing the D&RG railroad tracks 0.5 km (0.3 mi) south of Parrish Lane in Centerville. The alignment then turned north and crossed Parrish Lane, then turned northeast and crossed 1250 West and continued to the UPRR tracks. Alternative A paralleled the UPRR tracks on the western side until its terminus at the I-15/US-89 interchange in Farmington.

Alternative B

Alternative B was the westernmost alternative for the segments in North Salt Lake and Farmington. It included four frontage roads. As with Alternative A, the southern terminus was at the I-215/2100 North interchange in Salt Lake City. A new interchange would have been constructed 0.9 km (0.6 mi) west of the existing Redwood Road interchange. The Alternative B alignment then proceeded northwest and then northeast across Center Street and 900 North in North Salt Lake, and then proceeded to a point 0.6 km (0.3 mi) west of the intersection of 500 South and Redwood Road. The alignment then proceeded northeast to Parrish Lane and continued northeast and across the D&RG tracks and Sheep Road, turned north and paralleled the D&RG tracks along the eastern side. Near Lund Lane in Farmington, Alternative B split into two legs, creating two northern termini locations, one at the I-15/US-89 interchange in Farmington and one at I-15 near the Kaysville rest area.

Alternative C

Alternative C was the westernmost alternative for the segment in Centerville. It included three frontage roads. As with Alternatives A and B, the southern terminus was at the I-215/2100 North interchange in Salt Lake City. The alignment followed Alternative A to 900 North in North Salt Lake, at which point it

followed the Alternative B alignment to 500 South. Alternative C then became the westernmost alignment through West Bountiful, and then rejoined the Alternative B alignment just south of Pages Lane. Through Centerville, it ran along the west side of the D&RG tracks and Sheep Road until it crossed the tracks approximately 0.6 km (0.4 mi) south of Lund Lane. The Alternative C alignment continued northeast for about 1.0 km (0.6 mi) before turning north to parallel the UPRR tracks until its terminus at the I-15/US-89 interchange in Farmington.

Alternative D (Final EIS Preferred Alternative)

Alternative D, the Preferred Alternative presented in the Final EIS, was a combination of portions of segments of Alternatives A and C. Alternative D (Final EIS Preferred Alternative) followed the Alternative C alignment south of 900 North in Woods Cross, and then transitioned to the Alternative A alignment just north of 900 North. The Preferred Alternative continued on the Alternative A alignment to a point just north of 500 South in West Bountiful, then transitioned to an alignment about 80 m (264 ft) east of and parallel to Alternative C. It then rejoined Alternative C just south of Pages Lane in West Bountiful and followed Alternative C to Porter Lane in Davis County. At this point, the Preferred Alternative transitioned east and coincided with Alternative A just south of Parrish Lane in Centerville. From there to the I-15/US-89 interchange, the Final EIS Preferred Alternative followed Alternative A. The Preferred Alternative included three frontage roads.

3.1.6 Reevaluation of Project Alternatives Using Revised Travel Demand Model

As part of the Supplemental EIS process, revised travel demand modeling was conducted using the WFRC 2004 regional travel demand model (version 3.2). Table 3-2 and Figure 3-3 show the results of the updated travel demand modeling. Table 3-3 provides a summary description of some of the major roadway network assumptions used in evaluating the alternatives presented in Figure 3-3.

Table 3-2 I-15 and Legacy Parkway Operating Conditions in 2020 at Woods Cross Screenline under No-Build Alternative and Shared Solution Scenarios

Measure of Effectiveness	No-Build Alternative ¹	Shared Solution ²
I-15		
Peak period, peak direction LOS ³	7,890 pcpl (LOS F)	6,020 pcpl (LOS D)
Legacy Parkway		
Peak-period, peak-direction LOS ³	—	5,120 pcpl (LOS D)

Notes:

¹ The No-Build Alternative includes all elements in the WFRC long range plan for 2020, except for Legacy Parkway and the Legacy North project. The long range plan in 2020 does not include full widening of I-15 in the North Corridor. It includes transit mode share of 4.8 percent.

² The Shared Solution includes a ten-lane I-15; four-lane Legacy Parkway; projected maximum future transit mode share of 5.3 percent; improved arterials; and TSM, ITS, and TDM.

³ The peak-period LOS is the average condition during the 3-hour p.m. period, which includes the peak hour and the hour immediately before and the hour immediately after the peak hour.

Pcpl = passenger-car equivalents per lane.

Source: WFRC 2004 travel demand model (version 3.2).

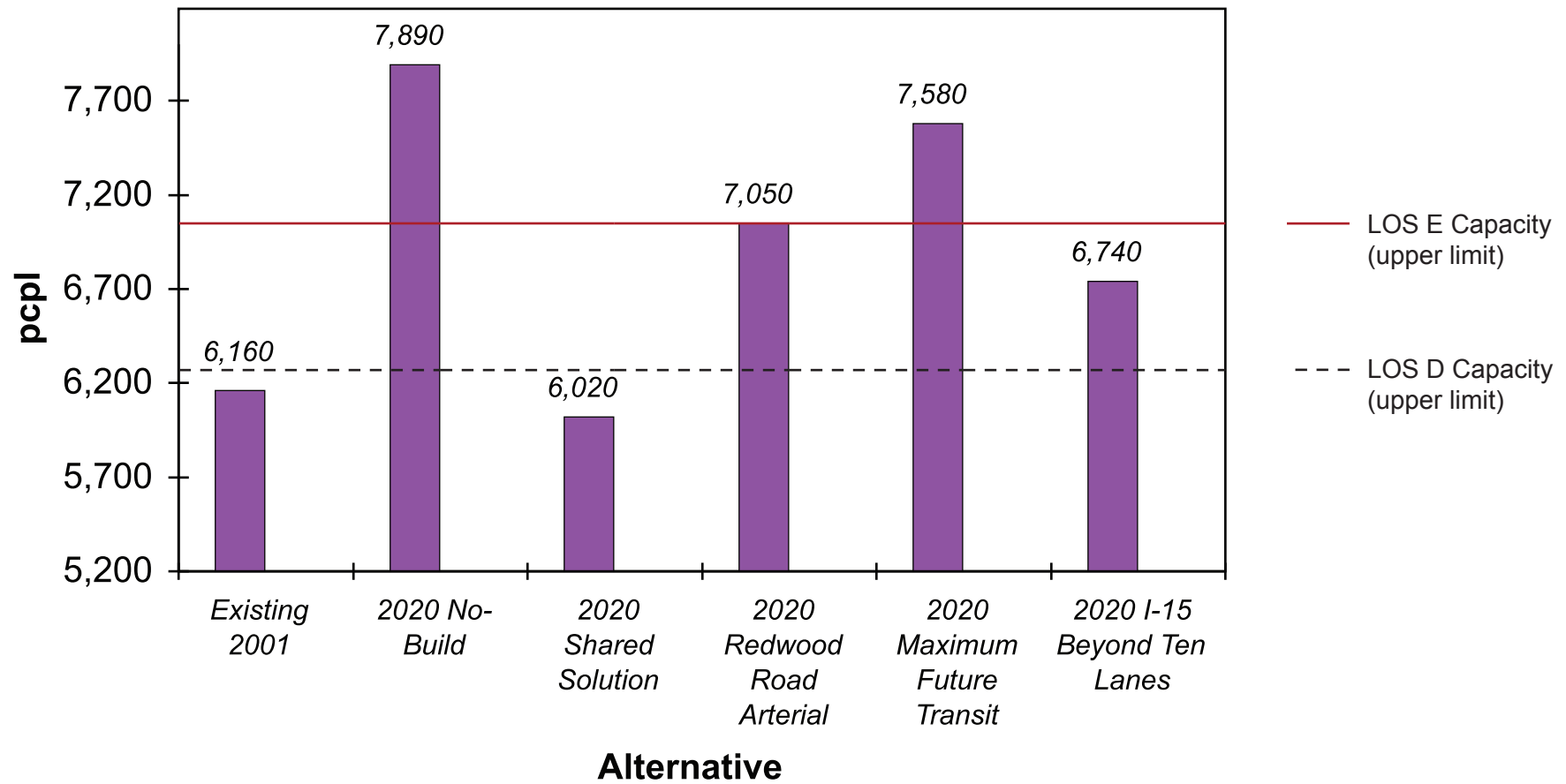


Figure 3-3
I-15 Traffic Volume, Peak Period Peak Direction

Table 3-3 Summary Description of Network Assumptions for Evaluating Alternatives

Alternatives	I-15 Configuration	Legacy Parkway	Transit	Redwood Road	Arterial Street Plans	Demand Year
Existing 2001	Highway and transit network as they exist in 2001 per the calibrated WFRC model	Highway and transit network as they exist in 2001 as per the calibrated WFRC model	Highway and transit network as they exist in 2001 per the calibrated WFRC model	Highway and transit network as they exist in 2001 per the calibrated WFRC model	Highway and transit network as they exist in 2001 per the calibrated WFRC model	2001
No-Build	8 lanes	Not built	WFRC long range plan	5 lanes	WFRC long range plan	2020
Shared Solution	10 lanes (includes 2 HOV lanes)	4 lanes	maximum future transit	5 lanes	WFRC long range plan	2020
Redwood Road Arterial	8 lanes	Not built	maximum future transit	8 lanes (with limited access control)	WFRC long range plan	2020
Maximum Future Transit	10 lanes	Not built	maximum future transit	5 lanes	WFRC long range plan	2020
I-15 Improvements Beyond Ten Lanes	12 lanes	Not built	maximum future transit	5 lanes	WFRC long range plan	2020

Notes:

Although the Legacy North project is in the WFRC long range plan, it was not included in the future network for the alternatives evaluation analysis in this Supplemental EIS.

The WFRC travel demand model (version 3.2), February 2004 includes TSM, ITS, and TDM.

As shown in Table 3-2 and Figure 3-3, I-15 would operate at LOS D during the peak period, peak direction under the Shared Solution with a four-lane Legacy Parkway. The combined total volume on I-15 plus Legacy Parkway under the Shared Solution exceeds the volume on I-15 under the No-Build Alternative because traffic accommodated on Legacy Parkway and widened I-15 under the Shared Solution is forced onto local streets under the No-Build Alternative. The higher total volume is also a result of the latent or suppressed demand created by the LOS F condition under the 2020 No-Build Alternative, which is discussed in Section 1.2.4 of this Supplemental EIS. Based on the results of the updated travel model as shown in Table 3-2, the decision in the Final EIS to carry forward Legacy Parkway to be studied in detail is still valid to meet projected regional travel demand needs. The Legacy Parkway alternatives under the Shared Solution scenario were therefore carried forward for detailed study and reevaluation in this Supplemental EIS. See Appendix B for detailed documentation of the travel demand modeling process. Although the total population percentage increases shown in this Supplemental EIS are lower than those reported in the Final EIS, the annual rate of population growth (1.9 percent) is the same for both analyses. The difference is due to the change in the number of years for the projections; the Final EIS projected growth from 1997 to 2020, while this Supplemental EIS is based on 2001/2002 to 2020.

As shown in Table 2-9 in the Final EIS, the level of service predicted for I-15 under the Shared Solution was LOS E (2,030 passenger-car equivalents per hour per lane [pcphpl]) in the peak hour, peak direction.

Since publication of the Final EIS, the *Highway Capacity Manual* (Transportation Research Board 2000) has increased the maximum vehicle flow that determines LOS D for a travel lane from 1,985 pcphpl (used in the Final EIS) to 2,090 pcphpl. LOS E, as used in the Final EIS, would now be defined as LOS D under today's highway capacity definition. The 3-hour peak period capacity per lane is three times the 2,090 peak hour capacity, or 6,270 passenger-car equivalents per lane (pcpl).

3.2 Additional Project Alternatives Evaluated in This Supplemental EIS but Eliminated from Detailed Study

This section presents results of new evaluations performed for this Supplemental EIS of two alternatives that were considered in the Final EIS (D&RG Regional Corridor Alternative and I-15 Beyond Ten Lanes Alternative) and five other alternatives (Parkway Facility Adjacent to Redwood Road Alternative, Redwood Road Arterial Alternative, I-15 with Reversible Lanes Alternative, Legacy Parkway Beyond Four Lanes Alternative, and a newly defined scenario for a Maximum Future Transit Alternative) developed for this Supplemental EIS. The two alternatives already analyzed in the Final EIS were reevaluated in this Supplemental EIS, as described below in Section 3.2.2. Two new alternatives were also developed and analyzed in response to input received from the public during the Supplemental EIS scoping process. To analyze these alternatives, evaluation measures were developed based on the purpose and need and other evaluation criteria.

Mass transit solutions were reviewed using the updated WFRC 2004 travel demand model (version 3.2) as part of the Supplemental EIS process, and a new robust transit scenario (maximum future transit) was developed as part of the analysis for integrating Legacy Parkway with mass transit. The updated WFRC travel model predicts that, with the transit system defined in the adopted current WFRC long range plan (adopted in December 2003), transit will carry 4.8 percent of the travel demand in the North Corridor in 2020. The Maximum Future Transit Alternative analyzed in this Supplemental EIS presents a scenario under which transit could be refined and enhanced in the corridor such that transit would carry 5.3 percent of demand in 2020. According to the model results, the Maximum Future Transit Alternative scenario alone would not meet the capacity demand in the North Corridor. For all alternatives evaluated in the Final EIS and Supplemental EIS, the lead agencies considered that a portion of the travel demand need in the corridor would be met by transit. For the Supplemental EIS, that transit component was based on maximum future transit, the robust transit scenario developed as part of the integration analysis, as summarized in Section 2.3.

3.2.1 Criteria for Evaluating Additional Alternatives

The primary purpose of the Legacy Parkway project is to provide capacity to help relieve existing and projected travel demand in the North Corridor through 2020, and the secondary purpose is to provide an alternate north-south route through the North Corridor (see Chapter 1, *Purpose of and Need for Action*). The purpose and need statement summarizes the issues in the corridor and was used to develop criteria for evaluating potential project alternatives. The criteria are measures of effectiveness by which potential alternatives are evaluated to determine how well they meet the project purpose and need, and which are reasonable to carry forward for further detailed and specific evaluation.

Ability to Meet Project Purpose and Need

As part of the Supplemental EIS alternatives screening process, measures were developed to evaluate the ability of the potential alternatives to address capacity and alternate route deficiencies (project purpose and need). The primary criterion for screening alternatives is the ability of the alternative to relieve congestion through 2020, such that I-15 can operate at a minimum LOS D. The peak-period level of service was used as the measure of effectiveness for reducing congestion and for screening alternatives. The peak period is the 3-hour period that includes the single peak hour (hour with the worst level of service) and the peak shoulders (the peak shoulders are the hour before and the hour after the peak hour). The level of service during the peak period is the average of the 3-hour peak period. Alternatives were evaluated to determine whether they would relieve traffic congestion during this peak 3-hour period by providing at least a minimum LOS D capacity on I-15.

Level of service (LOS) is a measure of traffic flow efficiency and congestion, and is represented by a letter “grade” ranging from LOS A for excellent conditions (free-flowing traffic) to LOS F for failure conditions (extremely congested, stop-and-go traffic). LOS B through LOS E describe progressively worsening traffic conditions. In urban areas, LOS E is typically considered a poor operating condition. LOS D is acceptable for urban and suburban conditions where constraints make it unreasonable to reach the desired LOS C (American Association of State Highway and Transportation Officials 2001). The LOS D goal is also consistent with the WFRC Congestion Management System (CMS) report (Wasatch Front Regional Council 2004). The Final EIS used LOS D in the *peak hour* to test the effectiveness of potential alternatives. The Supplemental EIS uses a standard of average LOS D for the 3-hour *peak period*. Although a single hour may exhibit higher peak-direction traffic levels, the shoulder hours will remain sufficiently low that the 3-hour average will be LOS D. This standard allows that, while peak-hour conditions may spread into adjacent hours in the future, the spread will not be substantial enough to raise the shoulder hour LOS, nor the 3-hour average, to worse than peak-period LOS D. The flow rate of vehicles at failure conditions (LOS F) is highly variable and can create breakdown (stop and go) conditions. The peak period measure allows evaluation of the degree to which peak-hour failure conditions will erode conditions in the hours before and after the peak hour. Therefore, evaluation of alternatives for the Supplemental EIS is based on a threshold of average LOS D in the full 3-hour peak period, to measure each alternative’s effectiveness at meeting the project purpose of reducing congestion.

Another evaluation criterion for screening alternatives, relative to their ability to meet purpose and need, is the ability to provide a single, continuous, north-south alternate route to I-15. Currently, the only continuous north-south route in the North Corridor is I-15, which has capacity and design deficiencies. The alternate route is a necessary part of an integrated transportation network that would help reduce local congestion in the communities along the North Corridor during emergencies or other highway incidents or when I-15 is closed, congested, or under construction.

None of the alternatives evaluated was screened out based solely on its inability to meet the secondary purpose of providing an alternate route.

Other Alternatives Screening Criteria

In addition to meeting purpose and need, other factors were also considered when evaluating whether an alternative was reasonable to carry forward for detailed analysis in this Supplemental EIS. These evaluation criteria included environmental factors such as impacts related to wetlands, farmland, hazardous waste sites, and Section 4(f)/6(f) resources; socioeconomic factors such as utility, business, and residential relocations, as well as community impacts; and cost. This approach is consistent with the evaluation criteria applied as part of the evaluation of alternatives analysis presented in the Final EIS (see Table 2-11 in the Final EIS). These factors are an appropriate subset of the full range of factors

considered in a detailed impact analysis because they were most frequently raised as important issues during Supplemental EIS scoping, as well as in comments on the Final EIS.

3.2.2 Results of Additional Alternatives Evaluation

D&RG Railroad Corridor Alternative

Based on the analysis presented in the D&RG technical memorandum as summarized in Section 2.2, the D&RG regional corridor was eliminated from further consideration in the Supplemental EIS as a reasonable or practicable alternative for the following reasons.

- The D&RG alignments would require substantial relocations compared to Alternative E. (Alternative E is a revised version of Alternative D, the Final EIS Preferred Alternative; Alternative E is described in detail below under *Proposed Alignments and Project Features*.)
- The D&RG alignments would have considerably more impacts on community cohesion.
- The D&RG alignments would have far greater noise and visual impacts.
- The D&RG alignments would eliminate a large portion of the local tax base for the City of North Salt Lake by displacing or altering access routes to businesses.
- The D&RG regional corridor alternatives would cost between \$100 million and \$195 million more than Alternative E.

Parkway Facility Adjacent to Redwood Road Alternative

This alternative would place the proposed Legacy Parkway highway alignment parallel to Redwood Road on the west side through North Salt Lake and Woods Cross in the southern portion of the study corridor. The alignment for this alternative would merge with the Alternative D/E alignment about 1.6 km (1.0 mi) north of 500 South in Woods Cross. It is essentially a more easterly variation of Alternative A considered in the Final EIS. The Supplemental EIS analysis assumes that this alternative would be implemented in addition to widening I-15 to ten lanes, projected robust transit of 5.3 percent, and other improvements identified in the WFRC long range plan such as TSM, TDM, and improved arterials, except for Legacy Parkway and the Legacy North project. This alternative was considered during the development of the 1998 Major Investment Study (MIS) (Page 2.21, Section 2.3.4 Central Roadway Alternative), and was suggested again during the scoping meetings for the Supplemental EIS. However, the 1998 MIS recommended the West Roadway Alternative in the southern portion of that study area, which corresponds to the current Legacy Parkway corridor.

Section 4(f) of the of the UDOT Act of 1966 sets the requirements for considering park and recreation lands, wildlife and waterfowl refuges, and historic and archeological sites when developing transportation projects. FHWA has to consider the impacts from any transportation project on these types of Section 4(f) properties. FHWA cannot select an alternative that would use a 4(f) property unless it can demonstrate that there is no prudent and feasible option to using the property and that the alternative minimizes harm to the property. If there is a prudent and feasible alternative that avoids 4(f) properties, it must be selected. From I-215 to 1.6 km (1.0 mi) north of 500 South, the Parkway Facility Adjacent to Redwood Road Alternative would affect eight historic residential structures eligible for the National Register of Historic Places that are afforded protection under Section 4(f) (see Figure 5-3). The structures are on the west side of Redwood Road just south of where it becomes 500 South. They could be avoided by shifting the

alignment west to avoid Section 4(f) impacts, but that would place the alignment essentially on the same alignment as Alternative E. Shifting the alignment east would put it on top of Redwood Road, and Redwood Road is needed to accommodate local traffic in the corridor currently accessing Redwood Road (see Table 4.3-9 in Section 4.3.3.4 *Travel Patterns and Accessibility*). Moving the alignment east would also cause conflicts with Skypark Airport, including impacts on the airport's entrance, offices, hangars, and aircraft and automobile parking areas. The entire airport would likely have to be relocated. Because Alternatives A, B, C, and E are feasible and prudent alternatives that avoid these 4(f) impacts in the area from I-215 to north of 500 South, this alternative is not feasible and prudent under Section 4(f) and is therefore eliminated as a reasonable alternative. See Chapter 5, *Section 4(f) and 6(f) Evaluation*, of this Supplemental EIS for a detailed discussion of Section 4(f)/6(f) resources.

Redwood Road Arterial Alternative

The Redwood Road Arterial Alternative, sometimes referred to as the "Robust Redwood Road Alternative," would widen Redwood Road to an eight-lane, partially-controlled (includes signalized intersections) facility from I-215 in North Salt Lake to 500 South in Woods Cross, at which point it would follow the Alternative D/E alignment and then connect to the I-15/US-89 interchange in Farmington. This alternative would include widening I-15 to ten lanes, projected maximum future transit, and other improvements identified in the WFRC long range plan such as improved arterials, TSM, ITS, and TDM. It does not include either Legacy Parkway or the Legacy North project (see Table 3-3).

Capacity Issues

As shown in Table 3-4 and Figure 3-3, under the Redwood Road Arterial Alternative, even with an expanded I-15 and maximum future transit, I-15 would operate between LOS E and LOS F in the peak direction for the full 3-hour peak period. This does not meet the evaluation criteria of achieving a minimum peak period LOS D standard on I-15. Therefore, this alternative would not reasonably meet the project purpose and need and was not carried forward for detailed study.

Data from the travel demand model show that almost 65 percent of the 2020 demand on I-15 is for peak-direction travel in the p.m. peak period from south of Davis County to north of Farmington, which is considered through-corridor travel. The improvements to Redwood Road under the Redwood Road Arterial Alternative would only draw 13 percent of the through-corridor traffic in the North Corridor, leaving I-15 in an unreasonably congested state, which would not meet the project purpose and need.

One reason the Redwood Road Arterial Alternative would not result in the needed reduction in congestion on I-15 is because it would still have at-grade intersections and other access points that would slow traffic and increase travel times through the North Corridor compared to travel times on Legacy Parkway or even on a still congested I-15. Because of the volume of cross traffic, traffic signals would be required at intersections approximately every 0.8 km (0.5 mi). Although these signalized intersections would provide access to businesses and local cross streets, they would impede north-south traffic flow.

Another reason this alternative would result in failure of I-15 is because it represents only three additional arterial lanes beyond the capacity of the planned five-lane Redwood Road in the baseline conditions. Redwood Road is an existing roadway, and its widening to five lanes is accounted for in the WFRC long range plan. Therefore, the net gain in capacity would be less than under the highway alternatives that provide additional (new) lanes. Even though it assumes widening I-15 to ten lanes, converting Redwood Road to a larger arterial would not provide enough additional new capacity compared to baseline conditions to provide acceptable level of service on I-15.

Table 3-4 I-15 Operating Conditions in 2020 for Alternatives Evaluated at Woods Cross Screenline

Measure of Effectiveness	No-Build Alternative ¹	Shared Solution ²	Redwood Road Arterial Alternative ³	Maximum Future Transit Alternative ⁴
I-15				
Peak-period, peak-direction LOS	7,890 pcpl (LOS F)	6,020 pcpl (LOS D)	7,050 pcpl (LOS E/F)	7,580 pcpl (LOS F)
Legacy Parkway				
Peak-period, peak-direction LOS	–	5,120 pcpl (LOS D)	–	–

Notes:

- ¹ The No-Build Alternative includes all elements in the WFRC long range plan for 2020, but it does not include Legacy Parkway and the Legacy North project. The long range plan does not include the full 10-lane widening of I-15 in the North Corridor in 2020.
- ² The Shared Solution is based on the same network assumptions as the No-Build, except that it includes a ten-lane I-15, four-lane Legacy Parkway, and maximum future transit.
- ³ The Redwood Road Arterial Alternative is based on the same network assumptions as the No-Build, except that it includes an eight-lane, limited-access Redwood Road; ten-lane I-15; and maximum future transit.
- ⁴ The Maximum Future Transit Alternative is based on the same network assumptions as the No-Build, except that it includes maximum future transit and a ten-lane I-15.

pcpl = passenger-car equivalents per lane during the 3-hour p.m. peak period.

Source: WFRC 2004 travel demand model (version 3.2).

Safety Concerns

The Redwood Road Arterial Alternative does not limit the diversion of through-corridor traffic onto local streets. The resulting local congestion would inhibit Redwood Road from serving the basic arterial function of providing accessibility to local communities. In addition, the risk of accidents would increase compared to a full-access-controlled facility. Principal arterials that are similar to this alternative have an accident rate of 5.1 per million vehicle miles traveled, compared to an accident rate of 1.5 per million vehicle miles traveled for full-access-controlled facilities similar to I-15 (see Table 1-4 in Chapter 1 of this Supplemental EIS). The higher accident rate means there would be a greater risk of accidents for through-corridor traffic and potential to cause associated congestion. It is therefore undesirable from a safety standpoint to have long-distance through-corridor traffic on signalized arterial streets when a freeway alternative is available. Traffic model analysis results show that congestion levels on I-15 must reach failure conditions before the slower speeds of a signalized arterial street, even an eight-lane arterial with improved access control, would provide a benefit.

Section 4(f) Impacts/Displacements

In addition to operational deficiencies, this alternative would have several negative effects. With respect to potential impacts on Section 4(f) properties as well as displacement of residential and commercial structures, the Redwood Road Arterial Alternative is similar to the Parkway Facility Adjacent to Redwood Road Alternative. Given the location and setting of the eight Section 4(f) properties (historic residential structures) on Redwood Road, the right-of-way required for widening the existing Redwood

Road to provide an eight-lane facility would also likely affect these structures. Since these properties are protected under Section 4(f), avoidance must be considered. The existing development along Redwood Road restricts possible shifts to avoid the Section 4(f) properties, as discussed above under the Parkway Facility Adjacent to Redwood Road Alternative. Because of the proximity of these two alternatives to each other, the number of residential and commercial structures displaced would be expected to be comparable.

Community Impacts

As a local arterial, the existing Redwood Road currently accommodates easy access to residential and commercial properties. The Redwood Road Arterial Alternative would expand Redwood Road to an eight-lane, partially controlled facility, thereby changing the nature of the roadway. Physical barriers such as medians and wider pavements to cross would alter the character of the surrounding communities. In addition, pedestrians and bicyclists would have more difficult crossings at more limited locations. Because Redwood Road would be greatly expanded, it might act as a natural divider for community development, especially with developable land located west of Redwood Road. These changes would adversely affect the sense of community cohesion in North Salt Lake, Woods Cross, and West Bountiful.

Conclusion

The Redwood Road Alternative would not meet criteria identified in Section 3.2.1 related to congestion relief on I-15. It would leave I-15 operating at LOS F throughout the peak period. Furthermore, this alternative would not be a reasonable solution because of its impacts on Section 4(f) properties and displacement of residential and commercial structures, as well as its impacts on pedestrian, bicycle, and other modes, safety, and other community interests. The Redwood Road Arterial Alternative would not meet the North Corridor demand for through-corridor traffic.

Boulevard Sub-Alternative

A variation on the configuration of the Redwood Road Arterial Alternative was recommended during the Supplemental EIS public scoping phase. The recommended alternative was conceived of as a boulevard-type facility. This alternative would widen Redwood Road through North Salt Lake and Woods Cross, and then extend a new arterial road north of 500 South in Woods Cross to the west side of the power utility corridor. This alternative alignment parallels the power lines in a northeasterly direction through West Bountiful and into Centerville, and then turns east and terminates at Parrish Lane in Centerville. This alternative was evaluated assuming a full build-out of the other components of the Shared Solution, including widening I-15 to ten lanes, maximum future transit, and other improvements identified in the WFRC long range plan. The Redwood Road Arterial Boulevard-Concept Alternative was eliminated from further analysis for all the same reasons as the Redwood Road Arterial Alternative. It would require similar or greater right-of-way than the Redwood Road Arterial Alternative, it would have similar environmental and Section 4(f) impacts, and it would not draw enough of the through-corridor trips off I-15 to meet the peak-period LOS D criteria.

Maximum Future Transit Alternative (No Legacy Parkway)

Like the Final EIS, the Supplemental EIS evaluated whether transit alone (i.e., without Legacy Parkway but with other elements of the WFRC long range plan) could meet projected travel demand. The key difference in the evaluations is that the Supplemental EIS used the maximum future transit scenario for this evaluation, rather than the lower transit share projected by the WFRC travel demand model for the long range plan.

The Maximum Future Transit Alternative includes a set of enhancements to the long range plan 2020 transit program similar to the robust transit packages identified through the integration analysis (see Chapter 2, *Integration of Legacy Parkway with Mass Transit*, Section 2.3). Like integration packages A and B described in Section 2.3, the Maximum Future Transit Alternative includes the following components.

- Bus rapid transit.
- Increased commuter rail frequencies.
- Increased parking prices in the Salt Lake City central business district and at the University of Utah.
- Land use concentrations that reflect transit-oriented development.
- All other transit improvements included in the WFRC long range plan.

The Maximum Future Transit Alternative also includes widening I-15 to ten lanes through the corridor, but it does not include construction of Legacy Parkway or the Legacy North project (see Table 3-3). As a result of the corridor capacity constraint and congestion resulting from the absence of a Legacy Parkway, travel demand model results show that transit would attract a slightly higher share of corridor travel, about 5.9 percent. While maximum future transit considered as part of the Shared Solution can attract approximately 5.3 percent, the transit share increases slightly if it is assumed that Legacy Parkway is not built and I-15 is expanded to 10 lanes. See Appendix B (Section B3.5.1) for a discussion of the different methods used to determine transit mode share for the Final EIS and the Supplemental EIS.

While enhanced transit would capture a moderate-to-high percentage of certain travel markets, the North Corridor serves a wide array of travel markets that are difficult for transit to attract. A high percentage of travel at the Woods Cross screenline has no relationship to the Salt Lake City central business district or other transit centers. Only about 5 percent of the travelers crossing the screenline in the p.m. peak period originate in the central business district and have destinations in south Davis County. About 22 percent of these travelers use transit. However, the vast majority of trips crossing the screenline originate at dispersed employment centers throughout the region or are long-distance inter-regional trips or non-commute trips made for purposes such as school, shopping, and entertainment, which have a very low transit mode share. As a result, the Maximum Future Transit Alternative would not substantially alleviate traffic on I-15.

As shown above in Table 3-4 and Figure 3-3, I-15 would operate at LOS F under this alternative in the peak direction for the entire 3-hour peak period. This does not reasonably meet the purpose and need evaluation criteria of achieving a minimum peak-period standard of LOS D in 2020. It also would provide a substantially lower level of service on I-15 than the Shared Solution (LOS D in the peak period, peak direction). Further, it would not meet the need for an alternate route. For these reasons, this alternative alone was not carried forward for detailed study in this Supplemental EIS.

Ten-Lane I-15 with Reversible Lanes Alternative (No Legacy Parkway)

The Ten-Lane I-15 with Reversible Lanes Alternative would include widening I-15 to ten lanes with reversible flow lanes, robust transit, and other improvements identified in the WFRC long range plan such as improved arterials, TSM, ITS, and TDM. It would not include Legacy Parkway and the Legacy North project. Under this alternative, I-15 would have six lanes in the peak direction and four lanes in the off-peak direction. One of the two reversible lanes would also be designated as an HOV lane.

Analysis in the I-15 North Corridor Draft EIS (Federal Highway Administration and Utah Department of Transportation 1998) suggested that the existing 60/40 p.m. peak-hour directional split on I-15 would likely flatten to 55/45 in the year 2020 based on continued dispersion of employment locations away from the central business district. This trend was based on output from the WFRC travel demand model as well as national data from cities with similar conditions to Salt Lake City. While the total directional split in the North Corridor would generally flatten, the 2004 WFRC travel demand model (version 3.2) and regional data indicate that the directional split in the p.m. peak hour would remain close to 60/40.

The design of a reversible lane facility generally limits access to the reversible lanes in order to serve longer trips through the corridor. This results in the mixed-flow lanes providing access to the interchanges along the facility and accommodating more local trips. Since access between the reversible and mixed-flow lanes typically only occurs at the termini, one disadvantage of this alternative is the reduced flexibility of the traffic distribution, resulting in an unbalanced distribution of traffic across the reversible and mixed-flow lanes (American Association of State Highway and Transportation Officials 2001).

From a capacity perspective, with the reversible lanes I-15 would have six lanes in the peak direction, which is similar to the I-15 Beyond Ten Lanes Alternative. As the travel demand modeling results for that alternative show in Figure 3-3, six lanes on I-15 in the peak period, peak direction result in LOS E. Operational inefficiencies associated with the combination of reversible and mixed-flow lanes would further limit the effectiveness of the Ten-Lane I-15 with Reversible Lanes Alternative. Due to the inadequate level of service in the peak direction on I-15, the Ten-Lane I-15 with Reversible Lanes Alternative would not provide sufficient traffic congestion relief along I-15 to eliminate the need for Legacy Parkway (see Figure 3-3). This alternative also does not meet the secondary purpose of providing an alternate north-south route through the North Corridor. Further, without an alternate north-south route, this alternative does not provide congestion relief for the sequencing of construction activities along I-15. For all these reasons, the Ten-Lane I-15 with Reversible Lanes Alternative is not reasonable for further consideration.

I-15 Improvements Beyond Ten Lanes Alternative (No Legacy Parkway)

The Legacy Parkway Final EIS evaluated how many additional lanes could be added to I-15 before the efficiency of the highway was diminished. AASHTO states, “typically there are no more than four through lanes in one direction” (American Association of State Highway and Transportation Officials 2001). The Final EIS discussed unusual cases that could warrant consideration of more than eight total lanes. The report concluded that reconstructing I-15 to more than ten lanes was not reasonable because of operational uncertainties associated with large traffic volumes, frequent interchanges along I-15 in the North Corridor, the lack of high-volume feeder routes, safety and snow removal problems, and substantial relocation impacts.

The I-15 North Draft EIS includes the following statements (Federal Highway Administration and Utah Department of Transportation 1998).

Ten-lane highways are not common; however, their operational and performance characteristics have been proven in several corridors throughout the United States. The same is not true, however, for highways with 12 to 16 lanes. Facilities with 12 lanes over an extended distance are very rare, and there are only a few examples of such highways in the United States... Where facilities larger than 10 lanes do exist (Washington, D.C., Chicago, and southern California), they include a barrier separating the interior lanes from the exterior lanes for each direction of travel. AASHTO classifies these highways as “dual-divided” and recommends their use when the number of lanes on a highway becomes too great to efficiently handle the volume of traffic.

Since the analysis in the I-15 North Draft EIS, revisions to the AASHTO *Green Book* and the *Highway Capacity Manual* (Transportation Research Board 2000) have both been adopted. Methods in the *Highway Capacity Manual* have increased the capacity of a single freeway lane from a maximum service flow rate of a 70-mph freeway under ideal conditions from 2,000 passenger cars per lane per hour in 1985 to 2,400 passenger cars per lane per hour. Furthermore, the *Highway Capacity Manual* 2000 assumes mainline free-flow speed adjustments that increase as the number of freeway lanes decreases (below five in each direction).

The evolving evidence suggesting greater per-lane capacities on I-15 is supported by the improved sensitivity of the WFRC travel demand model to reflect increases in travel demand based on increases in travel supply. The feasibility of expanding I-15 beyond ten lanes was reevaluated for this Supplemental EIS. This alternative includes expanding I-15 to 12 lanes, robust transit, and other improvements identified in the WFRC long range plan such as improved arterials, TSM, ITS, and TDM. No alternative north-south highway route would be constructed under this alternative. Studies completed for this Supplemental EIS forecast travel demand on I-15 in the year 2020 in the peak hour, peak direction at approximately 7,890 passenger-car equivalents per lane under the No-Build Alternative and 6,740 passenger-car equivalents per lane with six travel lanes in the peak period, peak direction on I-15. This results in LOS E on I-15 throughout the peak period in the peak direction, even under the assumption that all the lanes would offer ideal traffic-handling capabilities. As the ability of all traffic to use all lanes diminishes as the number of lanes increases, it is unlikely that this ideal condition would prevail, and conditions may become worse than LOS E.

The I-15 North Draft EIS (Federal Highway Administration and Utah Department of Transportation 1998) concluded that a dual divided freeway, comprising two one-way roadways for each direction of travel, would be necessary to serve the peak travel demand. This conclusion remains valid for alternatives that involve more than ten travel lanes on I-15. Given the need for a dual divided freeway, the inefficiencies suggested in the I-15 North Draft EIS related to balancing the demands for both through-corridor traffic and traffic entering or exiting the facility within the corridor would continue to exist.

A dual divided freeway would require additional right-of-way along I-15 to accommodate the horizontal expansion. Costs associated with a vertical expansion of I-15 would be extraordinary. Although the specific costs and impacts of these design considerations were not reevaluated, the underlying analysis is still valid. The design considerations of vertical structures and right-of-way requirements for horizontal expansion have not changed since the Final EIS.

The factors listed above confirm that a dual, divided, 12-lane (or more) I-15 facility could not effectively eliminate the need for Legacy Parkway. Thus, the reevaluation supports the conclusions of the Final EIS and the I-15 North Draft EIS that the I-15 Beyond Ten Lanes Alternative is not reasonable.

Legacy Parkway Beyond Four Lanes Alternative

For the Supplemental EIS, a six-lane Legacy Parkway was evaluated. The modeling of the six-lane Legacy Parkway resulted in a reduction of the peak-period, peak-direction demand on I-15 of less than 10 percent of the per lane demand on I-15 in 2020. This reduction equates to approximately 540 passenger-car equivalents per lane in the 3-hour peak period. Because the right-of-way needed for a six-lane facility would be larger than the area required for a four-lane facility, the impacts of this alternative would be expected to be similar in type but greater in magnitude compared to the four-lane Legacy Parkway alternatives. Given the additional costs and environmental impacts associated with this limited benefit in travel conditions on I-15, the Legacy Parkway Beyond Four Lanes Alternative is not reasonable. Also, because a four-lane Legacy Parkway facility would result in an acceptable level of service on I-15 in 2020, the addition of two more lanes would not be necessary for meeting the project purpose and need.

As noted in the Final EIS, if an expansion of Legacy Parkway is proposed at some point in the future (beyond 2020), it would be subject to environmental analysis and review at that time.

3.2.3 Summary of Alternatives Eliminated

As part of the Supplemental EIS process, the D&RG Regional Corridor Alternative (including the specific-alignment alternatives), Parkway Facility Adjacent to Redwood Road Alternative, Redwood Road Arterial Alternative, Maximum Future Transit Alternative, Ten-Lane I-15 with Reversible Lanes Alternative, I-15 Improvements Beyond Ten Lanes Alternative, and Legacy Parkway Beyond Four Lanes Alternative were evaluated to determine whether they were reasonable alternatives to building the proposed Legacy Parkway. In summary, these alternatives were eliminated for the following reasons.

- Each of the D&RG specific alignment alternatives was eliminated because of high community disruption impacts, a large number of relocations, and high costs.
- The Parkway Facility Adjacent to Redwood Road Alternative was eliminated due to Section 4(f) impacts
- The Redwood Road Arterial and Maximum Future Transit Alternatives alone (without Legacy Parkway) were eliminated because they did not result in I-15 operating at LOS D and therefore would not achieve the project purpose and need of providing capacity to relieve existing and projected travel demand in the North Corridor through 2020.
- The Ten-Lane I-15 with Reversible Lanes Alternative was eliminated because operational inefficiencies associated with the combination of reversible and mixed-flow lanes would limit the effectiveness of the alternative. In addition, it would not provide sufficient traffic congestion relief on I-15 to eliminate the need for Legacy Parkway, and it would not provide congestion relieve for the sequencing of construction activities along I-15.
- The I-15 Improvements Beyond Ten Lanes Alternative was eliminated because the design considerations and costs associated with right-of-way acquisition for a horizontal expansion or construction of a vertical expansion would be extraordinary.
- The Legacy Parkway Beyond Four Lanes Alternative was eliminated because additional capacity on Legacy Parkway beyond four lanes does not result in sufficient additional congestion relief on I-15, given the additional costs and environmental impacts, compared to a four-lane Legacy Parkway.

3.3 Alternative Ways of Implementing Legacy Parkway

3.3.1 Legacy Parkway with a Narrower Right-of-Way

Based on the results of the technical memorandum on narrower right-of-way issues as summarized in Section 2.1, it was concluded that the median could be reduced by 5 m (16 ft), resulting in a reduction in the total right-of-way width from 100 m (328 ft), as presented in the Final EIS, to 95 m (312 ft). This 95-m (312-ft) right-of-way width is used for most portions of the mainline right-of-way. However, in areas where wetlands, residences, or Section 4(f) properties can be completely avoided by further reducing the width of the footprint within the right-of-way, the footprint is reduced to 80 m (264 ft) with a reduced

buffer width. The Legacy Parkway build alternatives evaluated in this Supplemental EIS have been modified to reflect this narrower right-of-way width as the proposed action.

In considering reduction in total right-of-way width, an important distinction should be noted between the right-of-way width and the actual roadway footprint. The proposal analyzed in this Supplemental EIS involves not only a narrower right-of-way, but also context-sensitive design features within the right-of-way that allow for a more flexible roadway footprint. A more flexible footprint allows for further avoidance of sensitive resources, including wetlands, because it offers options: place the footprint of the road, the berm, and the trail to minimize impacts within the right-of-way and maintain natural habitats; further narrow the footprint in segments along the right-of-way; and curve the footprint of the roadway around sensitive resources. To reduce the right-of-way width any further would constrain the footprint alignment more and eliminate this flexibility to avoid wetlands and other sensitive resources.

3.3.2 Integrating Construction of Legacy Parkway with Mass Transit

Based on the results of the integration technical memorandum as summarized in Section 2.3, it was concluded that there are opportunities for integrating the construction of Legacy Parkway with mass transit improvements, and that some of these opportunities have already been implemented as part of the construction work completed to date (see Section 3.4.2). As part of the integration analysis, which was conducted in coordination with FTA, UTA, and representatives from the planning departments of local governments, a robust transit scenario was developed. In addition, since publication of the Final EIS, the UTA commuter rail project has advanced to the point that the Draft EIS for the project was released in April 2004 (Utah Transit Authority 2004). It is now more feasible to coordinate planning efforts between the two projects because more specific information is available about the commuter rail plans, including station locations. The analysis of alternatives evaluated in this Supplemental EIS has been modified to account for the opportunities for construction.

3.3.3 Alternative Construction Sequences for the Shared Solution

Based on the analysis presented in the Final EIS, it was assumed that the construction sequence for the major project components of the Shared Solution would be as follows: construct Legacy Parkway first, reconstruct I-15 second, and construct maximum future transit third.

Based on the analysis conducted for the Supplemental EIS and the sequencing technical memorandum as summarized in Section 2.4, it was concluded that the above construction sequence would still meet the project purpose and need and that an alternative construction sequence would also meet the project purpose and need as follows: construct maximum future transit and Legacy Parkway concurrently, and then reconstruct I-15.

3.3.4 Alternatives without Trail Component or Separate Trail Facility

In light of meeting the primary project purpose of helping to meet the existing and projected travel demand in the North Corridor through 2020, one of the functions of the proposed trail is to provide an alternative means of transportation. Parties that challenged the Final EIS argued that Legacy Parkway did not have to include a trail. The court found, however, that the Corps had “reasonably concluded that removing the trails was not practicable in light of the project’s overall purpose of meeting the transportation needs of the Northern Corridor in 2020” (*Utahns for Better Transportation et al. v. U.S. Department of Transportation et al.* [305F.3d1152 10th Cir. 2002]).

During the scoping processes for and the preparation of the Final EIS and Supplemental EIS, several communities and members of the public emphasized the desire for a trail along Legacy Parkway. The commenters indicated that the trail is important to their communities and would provide a pathway for pedestrians, bicyclists, and equestrians that connects to the Jordan River Trail and that would be integrated into the current and proposed trail system within the corridor. Therefore, after publication of the Final EIS, the federal agencies concluded that failure to include the trail would eliminate a benefit that some public opinion has identified as necessary. The Legacy Parkway Trail would be consistent with local land use plans for the cities in the study area. The appellate court considered and rejected arguments that had challenged the Legacy Parkway Trail as an integral part of the project that contributes to achievement of the project purpose. The court upheld the federal agency conclusions that the trail constituted part of the overall purpose of meeting the expected transportation needs in 2020. During the scoping process for the Supplemental EIS, the local communities again stressed their desire for a continuous trail. An alternative without a trail was therefore not carried forward for detailed study in this Supplemental EIS because it would not achieve the project purpose and need to the degree that alternatives with a trail would, would not be acceptable to the local communities, and would not be consistent with local plans.

In the Final EIS, the Legacy Parkway Trail was included within the project right-of-way. FHWA and UDOT consider trails within the proposed project right-of-way of a new facility such as Legacy Parkway to meet the intent of the Transportation Equity Act for the 21st Century. This act notes that features such as landscaping and bicycle, equestrian, and pedestrian trails should be considered in conjunction with highway projects. In addition, there are several existing and proposed trails in the North Corridor that would benefit from a continuous north-south trail to link them to each other and to developments and communities. Every city in the North Corridor along the proposed alignments has expressed support for a trail system as part of Legacy Parkway to help meet multi-modal transportation needs and to add amenities and recreation opportunities to the area. Without the continuous north-south trail associated with Legacy Parkway, the community trails would not link to other communities and would be inconsistent with community plans. UDOT, the project proponent, still proposes to construct a trail within the Legacy Parkway right-of-way. Alternative locations for a trail have not been pursued in this Supplemental EIS because, as explained above, the trail is an integral part of Legacy Parkway. The trail component of the proposed parkway facility is one feature of the project that addresses each of the three key goals of UDOT's policy on context-sensitive solutions (CSS): address the transportation need, be an asset to the community, be compatible with the natural and human environment. The trail provides additional capacity for alternate modes (walking and bicycling), which contributes to the project's ability to address the transportation need. Also, according to the input received by the local communities, the trail would be an asset to the communities. Finally, the trail is an important component of the project that contributes to the "parkway" feel of the project, making it a transition between the natural and human environments, and softening the hard aspects of the highway facility. See Section 1.3.2 of Chapter 1, *Purpose of and Need for Action*, for additional discussion of the proposed trail component and context-sensitive solutions.

An alternative without a trail as part of the proposed action was eliminated from further consideration and detailed analysis because the trail is a component of the project that contributes to a multi-modal aspect of meeting the local transportation needs. For informational purposes, differences in wetlands impacts from elimination of the trail and buffer area were calculated and presented in Table 2.1-4.

3.4 Alternatives Analyzed in Detail in this Supplemental EIS

The Final EIS describes the development of the Legacy Parkway roadway alignments that make up each build alternative (see Section 2.4 of the Final EIS). Each alignment was evaluated according to certain criteria, including impacts on wetlands and farmland, displaced homes and businesses, utility conflicts, and how far west the alignment was located from each community. The basic alignments of these alternatives have not changed since publication of the Final EIS.

Based on the evaluation of alternatives in this Supplemental EIS analysis, two important changes have been made that resulted in physical modification of the build alternatives that were considered reasonable in the Final EIS. The first change is that the alternatives have been modified to reflect a proposed narrower right-of-way width and a modified footprint within the right-of-way. The second is that modifications have been made to the physical configuration of the proposed Legacy Parkway to allow physical integration with construction of the commuter rail project.

In addition to the physical modifications to the project design, modifications have been made to the base assumptions concerning transit and mode choice that are applied to all alternatives analyzed. The following sections summarize the modifications to the alternatives carried forward for detailed study in this Supplemental EIS.

3.4.1 Modified Definition of the No-Build Alternative

The Council on Environmental Quality (CEQ) NEPA regulations (1986) require that an EIS include a “no-action” (or “no-build”) alternative that consists of not implementing a proposed action. Consistent with the Final EIS, the No-Build Alternative considered in this Supplemental EIS consists of the WFRC long range plan but without Legacy Parkway, without the Legacy North project, and without full reconstruction of I-15. The long range plan components included in the No-Build Alternative are commuter rail, widening Redwood Road from two to five lanes from south of I-215 to 500 South, enhanced bus service, and various local road improvements. The No-Build Alternative in the Supplemental EIS is different from the No-Build Alternative in the Final EIS in that the WFRC long range plan has since been updated to include commuter rail and other capacity-enhancing projects that have been added to the updated WFRC long range plan. In contrast to the build alternatives, the No-Build Alternative does not include the maximum future transit scenario because some of the more aggressive elements of the robust transit concept are not included in the current WFRC long range plan (see Appendix B). Table 3-5 shows the planned capacity-increasing projects at the Woods Cross screenline that were included in the 1998–2020 WFRC long range plan compared to the 2004–2030 WFRC long range plan. The phases are slightly different, but all are planned to occur prior to 2022.

Table 3-5 Comparison of Planned Capacity Improvements at Woods Cross Screenline for Updated WFRC Long Range Plan

Project	Segment (To/From)	Capacity Addition	1998 Plan Phase	2004 Plan Phase
Legacy Parkway	I-215 to US-89	From 0 lanes to 4 lanes	2010	2012
Redwood Road	Salt Lake County line to 500 South	From 2 lanes to 4 lanes	2020	2022
I-15	I-215 to 500 South	From 8 lanes to 10 lanes	2010	2022

Except in the stand-alone transit analysis described in Section 3.2.2 (Maximum Future Transit Alternative), full widening of I-15 to ten lanes is not included in the No-Build Alternative because, as detailed in the Final EIS (Appendix G) and based on the sequencing analyses in Section 2.4, *Sequencing of the Shared Solution*, of this Supplemental EIS, it would not be reasonable to proceed with the additional I-15 improvements without an alternate route in place, such as Legacy Parkway. The lack of an alternate route would cause an unacceptable level of congestion on I-15 when lanes are closed for construction, which would result in lost productivity for highway users and other adverse impacts described in Chapter 4, *Supplemental Environmental Analysis*, of this Supplemental EIS.

The No-Build Alternative analysis presented in Chapter 4 for each resource topic includes two scenarios: existing conditions and a future no-build scenario. The future no-build scenario considers the implications of reasonably foreseeable future build out, without Legacy Parkway, that could be in place by 2020.

3.4.2 Modified Build Alternatives A, B, C, and D/E

The build alternatives have been modified since publication of the Final EIS in relation to right-of-way width and integration of mass transit, as described below.

Modified Right-of-Way Width

As discussed in Section 2.1.2.2, in October 2003, after the Final EIS was completed, UDOT revised its design standards for new freeways and changed the minimum median width criteria. Based on this new information and the analysis from the technical memorandum on right-of-way issues, the median width of all alternatives has been reduced from 20 m (66 ft) to 15 m (50 ft). As a result, it was determined that the median width for the proposed Legacy Parkway could be reduced by 5 m (16 ft), without substantially compromising the safety of the facility. This change reduced the overall right-of-way width for Legacy Parkway from the 100-m (328-ft) width proposed in the Final EIS to 95 m (312 ft) for this Supplemental EIS (see Figure 2.1-1 in Chapter 2 of this Supplemental EIS). The impact analysis presented in this Supplemental EIS is based on the revised (narrower) right-of-way width of 95 m (312 ft) for all build alternatives. UDOT evaluated the revised median width in *Legacy Parkway Technical Memorandum: Right-of-Way Issues* (HDR Engineering, Inc. 2004a). Section 2.1 of this Supplemental EIS, *Narrower Right-of-Way Issues*, summarizes the results of that analysis.

Context-sensitive design solutions are included in the project design. As noted above in Section 3.3.1, the actual footprint of the roadway would be narrower than the 312-foot right-of-way in areas where it could be narrowed (to 80 m [264 ft]) to avoid environmental concerns, a residence, or a Section 4(f) property. In areas where wetlands could be avoided, the footprint of the roadway would be curved around wetlands, where feasible, but the right-of-way width would remain at 95 m (312 ft) so UDOT could provide protection for the wetland within the right-of-way. A similar approach would be applied to construction of the trail, placing the footprint of the trail outside and around the edges of wetlands. With this context-sensitive design approach, the 95-m (312-ft) right-of-way provides some flexibility within the right-of-way to avoid impacts on wetlands or other sensitive resources.

Modifications to Address Integration with Mass Transit

The *Legacy Parkway Technical Memorandum: Integration of with Mass Transit with Legacy Parkway* (Fehr & Peers 2004) presents and evaluates opportunities already realized and those that have future potential to integrate the construction of physical elements of the proposed Legacy Parkway with planned mass transit improvements in a way that provides efficient interfaces and service coordination of highway and transit travel. Because construction and design of portions of the project had already begun before

construction was halted by the court, some physical integration components with mass transit were implemented as part of that work under the design-build contract. The Legacy Parkway project includes the following physical construction integration components.

- Placing interchanges at locations of future planned commuter rail stations: The UTA Commuter Rail Draft EIS (Utah Transit Authority 2004) confirms that the proposed Legacy Parkway interchanges are located at or near the locations of future planned commuter rail stations (one in Farmington near the I-15/US-89/Legacy Parkway interchange and one in Woods Cross at 500 South near I-15). The proposed interchange locations of Legacy Parkway also allow for providing convenient park-and-ride facilities to facilitate carpooling and feeder-bus access to commuter rail stations.
- Changing the project design to lengthen structures to accommodate the physical integration of the commuter rail component of mass transit with Legacy Parkway and I-15: As a result of the work completed under the current design-build contract since the Final EIS, UDOT incurred an additional \$6.8 million in design and construction costs to allow for the physical integration of commuter rail in the following structures: Park Lane (formerly Burke Lane) (construction completed), I-15 southbound to Legacy Parkway southbound, Legacy Parkway northbound to I-15 northbound, US-89 southbound to Legacy Parkway southbound, Legacy Parkway northbound to US-89 northbound, State Street, and Glovers Lane.
- Providing funding (\$10 million) to UTA to aid in the purchase of commuter rail right-of-way that passes directly beneath a portion of the proposed Legacy Parkway and adjacent to I-15.

For a detailed description of the analysis of interactive effects of pursuing multiple transit enhancement activities in combination as part of the Shared Solution, see Sections 7.0 and 8.0 of the *Legacy Parkway Technical Memorandum: Integration of with Mass Transit with Legacy Parkway* and Section 2.3 of this Supplemental EIS. Above and beyond the physical integration components of Legacy Parkway with mass transit, the integration technical memorandum analysis is based on the most current literature on how transit could be successful in an integrated way with other transportation system components. The analysis describes a full menu of integrated transit packages that would work in conjunction with the roadway system to provide a multi-modal approach to addressing transportation demand in the North Corridor. The integrated transit packages analyzed included physical improvements such as commuter rail, rail, and bus feeder stations; service improvements such as adding bus rapid transit; program and policy changes such as increased parking fees in the downtown Salt Lake City area; and land use plan changes to direct growth in a more transit-oriented development direction.

The maximum future transit approach used to evaluate integration does not result in physical modifications to the build alternatives analyzed in detail in this Supplemental EIS beyond those presented in the bullet list above. The approach changed since the Final EIS to evaluate how regional transportation components relate to each other, but the detailed physical impacts of each alternative alignment were evaluated in the same way. This maximum future transit approach included assumptions in the modeling of potential reasonable alternatives that would provide mass transit with the best chance for full effective implementation, before addressing the need for Legacy Parkway.

UDOT has coordinated with UTA (in conjunction with FTA) as UTA has proceeded with its planning and EIS for the commuter rail project. Since publication of the Final EIS, commuter rail planning has advanced to the stage that a Draft EIS was released to the public in April 2004 (Utah Transit Authority 2004). See Appendix A of this Supplemental EIS for a copy of the charter created by UTA and UDOT for coordination and cooperation in development of the Shared Solution transportation improvements. Now

that more detailed planning and environmental compliance processes are underway for the commuter rail project, UTA is taking advantage of the integration options offered by the Legacy Parkway project.

Proposed Alignments and Project Features

The alignments for Alternatives A, B, C, and D/E have remained basically the same as those identified in the Legacy Parkway Final EIS, as shown in Figure 3-2 and as described in Section 3.1.4 above, although the right-of-way widths have been modified, as mentioned above, and modifications have been made to address integration with mass transit. In addition, many of the key project features (frontage roads, four-lane roadway, trail, and berm in selected areas) have not changed since the Final EIS. Consistent with the opinion of the appellate court, this Supplemental EIS includes a multi-use trail as part of the proposed Legacy Parkway project. Parties that challenged the Final EIS argued that Legacy Parkway did not have to include a trail. The court found, however, that the Corps had “reasonably concluded that removing the trails was not practicable in light of the project’s overall purpose of meeting the transportation needs of the Northern Corridor in 2020, thus the issuance of the permit is not arbitrary and capricious on this basis” (*Utahns for Better Transportation et al. v. U.S. Department of Transportation et al.* [305F.3d1152 10th Cir. 2002]). See Section 3.3.4 *Alternatives without a Trail Component or Separate Trail Facility*, for additional discussion of the proposed trail component.

Table 3-6 below summarizes the key features of the Legacy Parkway build alternatives as identified in the Final EIS. For a detailed description of the build alternatives, except for the changes noted above, see Section 2.5 of the Final EIS. Alternative E is a new alternative considered in this Supplemental EIS. Alternative E follows the same alignment as Alternative D (Final EIS Preferred Alternative) except that Alternative E has a narrower right-of-way width, 95 m (312 ft) as opposed to 100 m (328 ft). Alternative D is no longer under consideration; it is presented in Table 3-6 for comparison purposes only.

Table 3-6 Summary of Features of Modified Build Alternatives

Feature	Modified Alternative A	Modified Alternative B	Modified Alternative C	Final EIS Preferred Alternative D (Dropped)	Supplemental EIS Alternative E (New)
Right-of-Way Width	95 m (312 ft)	95 m (312 ft)	95 m (312 ft)	100 m (328 ft)	95 m (312 ft)
Structures – Overpasses					
Center Street in North Salt Lake	✓	✓	✓	✓	✓
900 North in North Salt Lake	✓				
1250 West in Centerville				✓	✓
Glovers Lane in Farmington	✓	✓	✓	✓	✓
State Street in Farmington	✓	✓	✓	✓	✓
Park (formerly Burke) Lane in Farmington ¹	✓	✓	✓	✓	✓
Structures – Underpasses					
Sheep Road in Centerville	✓	✓			

Feature	Modified Alternative A	Modified Alternative B	Modified Alternative C	Final EIS Preferred Alternative D (Dropped)	Supplemental EIS Alternative E (New)
D&RG Railroad in Centerville	✓	✓	✓		
1250 West in Centerville ²	✓			✓	✓
1250 West in Centerville/ 650 West near Farmington			✓		
Glovers Lane in Farmington (western leg)		✓			
Shepard Lane in Farmington (western leg)		✓			
Interchanges					
I-215 in Salt Lake City (southern terminus)	✓	✓	✓	✓	✓
500 South in Woods Cross	✓	✓	✓	✓	✓
Parrish Lane in Centerville	✓	✓	✓	✓	✓
I-15/US-89 in Farmington (northern terminus)	✓		✓	✓	✓
I-15 in Kaysville (western terminus)		✓			
US-89 in Farmington (eastern terminus)		✓			
Trail	✓	✓	✓	✓	✓
Berm ³	✓	✓	✓	✓	✓
Frontage Roads	2	4	3	3	3

Feature	Modified Alternative A	Modified Alternative B	Modified Alternative C	Final EIS Preferred Alternative D (Dropped)	Supplemental EIS Alternative E (New)
Notes:					
¹ Although connected to this project, the reconstruction of the Park Lane (formerly Burke Lane) interchange in Farmington was allowed to continue and has since been completed. (See <i>Foreword/Introduction</i> page 3 for a discussion of the activities the court allowed to continue.)					
² Alternative A and Alternative D (Final EIS Preferred Alternative that was modified to create Alternative E) now cross Sheep Road, the D&RG railroad tracks, and 1250 West at grade. 1250 West will be on an overpass over Legacy Parkway. The D&RG tracks and Sheep Road will be permanently bisected. There will be cul-de-sacs at both ends of Sheep Road.					
³ The berm feature applies to all alternatives. It would run along the east side between 500 South and Porter Lane in West Bountiful, and along the west side between Glovers Lane and State Street in Farmington. Even though the alignments differ in these areas, the berm would run along the same locations adjacent to the mainline. The purpose of the berm is to provide visual and acoustical buffering between the highway and existing and future planned development. Throughout the planning process, the surrounding communities have expressed their preference for the landscaped buffer area to separate the trail from the roadway. The berm is proposed only in those areas where adjacent land uses require greater visual and acoustic buffering than that provided by the separation between the roadway and the trail. Public comments received through the public involvement process demonstrated a preference for an earthen berm as a more natural visual and acoustic barrier rather than a common noise wall.					

Modified Alternative A

The modified Alternative A would be a four-lane, limited-access, divided highway and trail, constructed within a narrower right-of-way than the Final EIS right-of-way (95 m [312 ft] vs. 100 m [328 ft]). Additional right-of-way would be needed in areas where the two frontage roads would be located. A multi-use trail for pedestrians, bicyclists, and equestrians would be provided from south of I-215 connecting to the Jordan Parkway Trail to State Street (Clark Lane) in Farmington. An earthen berm would be included at some locations between the highway and the trail.

The southern terminus of Alternative A would be at the I-215/2100 North interchange in Salt Lake City. I-215 would be widened between 2100 North and a new (Legacy Parkway) interchange 0.5 km (0.3 mi) west of the I-215/Redwood Road interchange in North Salt Lake. The existing ramps at Redwood Road would be reconstructed and realigned to accommodate the new ramps for Alternative A, but the interchange would continue to function as a diamond interchange and all existing movements would be preserved. New ramps would be constructed in the future to connect I-215 to I-15 east of Redwood Road. As part of the I-15 North expansion project, ramps would be completed connecting Legacy Parkway to I-15 south of I-215.

North of I-215, Alternative A would be an entirely new highway. From the I-215 interchange, Alternative A would proceed north, cross Center Street and 900 North in North Salt Lake, and proceed to a point 0.6 km (0.3 mi) west of the intersection of 500 South and Redwood Road in Woods Cross. It then would turn northeast for about 4.5 km (2.8 mi) before crossing the D&RG Railroad about 0.5 km (0.3 mi) south of Parrish Lane in Centerville. The alignment would then turn north, cross Parrish Lane, and parallel the D&RG tracks on the eastern side for 1.0 km (0.6 mi), and then turn northeast, cross 1250 West in Centerville, and continue to the UPRR.

From Centerville to Farmington, Alternative A would parallel the existing UPRR and I-15 adjacent to and west of the power lines on the western side of the railroad. Alternative A would cross under Glovers Lane

and State Street (Clark Lane) and terminate at the interchange of I-15 and US-89 at Park Lane (formerly Burke Lane) in Farmington. The entire I-15/US-89 interchange would be reconstructed to provide connections from US-89 to both I-15 and the new Legacy Parkway. Burke Lane has been reconstructed as Park Lane and extended across I-15 and the UPRR to connect with State Street (Clark Lane) at 1100 West in Farmington.

Modified Alternative B

The modified Alternative B would be a four-lane, limited-access, divided highway and trail constructed within a narrower right-of-way than the Final EIS right-of-way (95 m [312 ft] vs. 100 m [328 ft]). Additional right-of-way would be needed in areas where the four frontage roads would be located. The southern terminus of Alternative B would be at the I-215/2100 North interchange in Salt Lake City. I-215 would be widened between 2100 North and a new (Legacy Parkway) interchange about 0.9 km (0.6 mi) west of the I-215/Redwood Road interchange in North Salt Lake. Alternative B would proceed northwest and then northeast, cross Center Street and 900 North in North Salt Lake, and then proceed to about 0.6 km (0.3 mi) west of the intersection of 500 South and Redwood Road in Woods Cross. From 500 South in Woods Cross, Alternative B would proceed northeast to Parrish Lane in Centerville. It would continue northeast, cross the D&RG Railroad and Sheep Road, and then turn north, parallel to and just east of the D&RG right-of-way.

At Lund Lane in Farmington, Alternative B would split into two legs. The western leg would continue along the D&RG for 1.1 km (0.7 mi), cross the railroad and Glovers Lane, and then parallel Glovers Lane for about 2.0 km (1.2 mi). The alignment then would turn north for about 4.5 km (2.8 mi) and cross State Street (Clark Lane) and Shepard Lane. This alignment would be about 3.0 km (1.9 mi) west of I-15 and would provide two lanes in each direction. The northern terminus would connect with I-15 near the Kaysville rest area, about 3.2 km (2 mi) north of the I-15/US-89 interchange (Reference Post [RP] 329).

From Lund Lane in Centerville, the eastern leg would connect directly with US-89 at Park Lane (formerly Burke Lane). This leg would cross Glovers Lane and State Street (Clark Lane) and provide one lane in each direction. At the US-89 connection, this leg would run parallel to and just west of the UPRR. The existing I-15/US-89 interchange would be completely reconstructed. Burke Lane has been reconstructed as Park Lane and extended across I-15 and the UPRR to connect with State Street (Clark Lane) at 1100 West in Farmington.

Modified Alternative C

The modified Alternative C would be a four-lane, limited-access, divided highway and trail constructed within a narrower right-of-way than the Final EIS right-of-way (95 m [312 ft] vs. 100 m [328 ft]). Additional right-of-way would be needed in areas where the three frontage roads would be located. The southern terminus would be at the I-215/2100 North interchange in Salt Lake City. I-215 would be widened between 2100 North and a new (Legacy Parkway) interchange about 0.45 km (0.3 mi) west of the I-215/Redwood Road interchange in North Salt Lake. Alternative C would proceed north, cross Center Street and 900 North in North Salt Lake, and then proceed to about 0.6 km (0.3 mi) west of the intersection of 500 South and Redwood Road in Woods Cross. From 500 South, Alternative C would proceed northeast for about 5.6 km (3.5 mi) to Parrish Lane in Centerville. The alternative would then turn north for about 3.5 km (2.2 mi), paralleling the D&RG on the western side. It would then turn northeast, cross the railroad, and continue for about 1.0 km (0.6 mi) before it turns north (parallel to and just west of the UPRR), then terminate at I-15 and US-89 at Park Lane (formerly Burke Lane) in Farmington.

The entire I-15/US-89 interchange would be reconstructed to provide connections from US-89 to both I-15 and the new Legacy Parkway. Burke Lane has been reconstructed as Park Lane and extended across I-15 and the UPRR to connect with State Street (Clark Lane) at 1100 West in Farmington.

Alternative E (Modified from Final EIS Preferred Alternative D)

Alternative E follows the same alignment as Alternative D (Final EIS Preferred Alternative) but has a narrower right-of-way width than Alternative D and includes features to integrate it with mass transit.

The Preferred Alternative as proposed in the Final EIS was described as a four-lane, limited-access divided highway and trail constructed within a 100-m (328-ft) right-of-way. Description and analysis of the Preferred Alternative as proposed in the Final EIS is presented in this Supplemental EIS impact analysis for comparison purposes only, and is referred to as Alternative D. It has been modified, and the modified version is referred to as Alternative E in this Supplemental EIS.

As described in the Final EIS, this alternative would follow the Alternative C alignment South of 900 North in Woods Cross. Just north of 900 North, it would transition to the Alternative A alignment. It would continue on the Alternative A alignment to just north of 500 South in Woods Cross, then transition to an alignment about 80 m (264 ft) east of and parallel to Alternative C. It would then rejoin Alternative C just south of Pages Lane in West Bountiful and follow Alternative C to Porter Lane. At that point, it would transition east and follow Alternative A just south of Parrish Lane in Centerville. From there to the I-15/US-89 interchange, it would follow the Alternative A alignment.

The modified version of this alternative as proposed in this Supplemental EIS (Alternative E) would be a four-lane, limited-access, divided highway and trail constructed within a narrower right-of-way—or footprint—than the Final EIS right-of-way (95 m [312 ft] vs. 100 m [328 ft]). Like the modified Alternatives A, B, and C, Alternative E would be integrated with mass transit, as described above in Section 3.4.2. The proposed alignment remains the same as described above for Alternative D, with features as listed in Table 3-4 above for Alternative E.

3.4.3 Updated Project Cost Estimates

The cost estimates presented in Appendix N of the Final EIS have been updated for all four build alternatives. The changes to the estimates are based on the revised 95-m (312-ft) right-of-way. The estimates also reflect inflation between the June 2000 Final EIS and 2004. The cost estimates are based on the specific proposed alignments for each alternative. Table 3-7 below presents a comparison of the Final EIS and updated Supplemental EIS costs.

Table 3-7 Updated Project Cost Estimates

Alternative	Final EIS Cost Estimate	Updated Cost Estimate
Alternative A	\$372,490,000	\$420,780,000
Alternative B	\$450,613,493	\$533,070,000
Alternative C	\$377,782,911	\$453,190,000
Alternative D/E	\$369,200,000	\$425,890,000

Estimates shown in Table 3-7 include construction materials, right-of-way, and approximated wetland mitigation. Preliminary engineering, stipends, and incentives are items specific to the construction

contracts for Legacy Parkway and were not included in the estimates listed above or the estimates in the Final EIS. However, these items were included in the total cost of the Legacy Parkway project (\$451 million) that was documented after the Final EIS was published.

The estimated cost for the build alternatives (which represent proposed alignments within the Great Salt Lake corridor) is less than the estimate prepared for the Great Salt Lake regional corridor estimate shown in Table 3-1 and higher than the corridor estimate used for comparison purposes in the D&RG regional corridor evaluation (Table 2.2-8), because a more detailed alignment location was used to prepare the Table 3-7 estimates. This refinement provided more detailed estimates of material quantities, information on potential impacts, and right-of-way requirements, resulting in lower contingencies being applied to the estimates.

3.5 Summary of Alternatives Evaluated

This section and Table 3-8 summarize the alternatives evaluation information presented in this chapter. The chapter presents discussions of alternatives

- analyzed in the Final EIS and reevaluated in the Draft Supplemental EIS;
- evaluated for ability to meet the project purpose and need and against the reasonableness criteria, and eliminated from further consideration in the Draft Supplemental EIS;
- evaluated for alternative ways of implementing Legacy Parkway; and
- described and analyzed in full detail in Chapters 1–5 of this Draft Supplemental EIS.

Table 3-8 is organized by the following categories of alternatives.

- Non-highway alternatives.
- Expansion of I-15 alternatives.
- No-Build Alternative.
- Legacy Parkway alternatives.

3.6 Land Acquired to Date

Land acquired to date has included land for the roadway and land for mitigation. Legacy Parkway, as approved after the Final EIS and permitted by the Corps (Final EIS Preferred Alternative D), included terms for mitigation. To mitigate direct and indirect effects on wetlands and wildlife habitat, UDOT proposes mitigation (the Legacy Nature Preserve) consisting of 849 ha (2,098 ac) of land adjacent to Great Salt Lake. Within the Legacy Nature Preserve are 315 ha (778 ac) of existing wetlands that would be preserved from the impacts of future development. In addition to preserving these wetlands, their functions would be enhanced by removing land uses that currently affect these wetlands, and, in limited areas, restoring hydrology to areas where wetlands historically existed but no longer exist.

The property purchased to date was acquired for mitigation and for the Final EIS approved alternative (Alternative D); this property includes portions of Alternatives A, B, C, and E, as well as portions of the Legacy Nature Preserve, which was established as part of adopted mitigation in the ROD and the Section 404 permit. Property acquisition has continued during preparation of this Supplemental EIS. In total, UDOT has purchased 192 parcels (272 ha [671 ac]) of the 217 parcels (357 ha [881 ac]) located within the proposed Alternative D/E right-of-way. In addition, as of June 2004, of the total 849 ha (2,098 ac) in the Legacy Nature Preserve, only 67.6 ha (167 ac) (in five parcels) have not yet been purchased. Section 4.4, *Relocations*, of this Supplemental EIS lists additional properties that have been acquired since publication of the Final EIS.

The potential direct impacts of the 95-m (312-ft) right-of-way for Alternative E would be within the limits of the 100-m (328-ft) right-of-way of the Preferred Alternative analyzed in the Final EIS (Alternative D). UDOT will evaluate the property that has been purchased to date and, based on the transportation need of the alternative that may be selected in the ROD for this Supplemental EIS, UDOT will determine what property is no longer required for right-of-way. Excess property could be sold, transferred, or retained by UDOT. Alternatively, UDOT could have to acquire additional property for the alternative that is selected in the ROD. A more detailed update of land acquired to date is presented in Section 4.4, *Relocations*, of this Supplemental EIS.

Table 3-8 Summary of Alternatives Evaluated for Legacy Parkway Project

Alternative/Category	Screened Out in Final EIS and Reverified in Supplemental EIS Process	Analyzed in Detail in Final EIS and Reevaluated in Supplemental EIS Process	Evaluated and Screened Out in Supplemental EIS Process	Analyzed in Detail in Supplemental EIS
Regional Alignment Alternatives				
Great Salt Lake Regional Alignment		Several specific alignment alternatives within the Great Salt Lake regional alignment were analyzed in detail (Alternatives A, B, C, and D).		In addition to the alternatives within the Great Salt Lake regional alignment analyzed in the Final EIS, Alternative E was developed for the Supplemental EIS.
Antelope Island Regional Alignment	This regional alignment corridor was eliminated because of extraordinarily high costs and high impacts on wetlands.			
Trans-Bay Regional Alignment	This regional alignment corridor was eliminated because of extraordinarily high costs and high impacts on wetlands.			
Farmington Bay Regional Alignment	This regional alignment corridor was eliminated because of high costs and high impacts on wetlands.			
Union Pacific Railroad Regional Alignment	This regional alignment corridor was eliminated because of extraordinarily high costs and high impacts on existing land development.			
Denver & Rio Grande Railroad Regional Alignment	This regional alignment corridor was eliminated because of high costs and high impacts on existing land development.		Specific alignments were developed and evaluated based on cost, impacts on wetlands, and impacts on existing land development. See D&RG Railroad Alternatives below.	

Alternative/Category	Screened Out in Final EIS and Reverified in Supplemental EIS Process	Analyzed in Detail in Final EIS and Reevaluated in Supplemental EIS Process	Evaluated and Screened Out in Supplemental EIS Process	Analyzed in Detail in Supplemental EIS
Non-highway Alternatives				
Expand Existing Arterial Roads	This alternative alone does not meet the primary project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. These improvements were, however, included as part of the future baseline conditions.		Based on updated traffic modeling, this alternative alone does not meet the primary project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. These improvements are, however, included as part of the Shared Solution.	
Redwood Road Arterial			This alternative alone does not meet the primary project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. It does not meet the purpose of providing an alternate route. Expansion of Redwood Road to five lanes is included as part of the WFRM long range plan and in the Shared Solution and No-Build Alternative.	
Transportation Management Strategies	This alternative alone does not meet the primary project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. It does not meet the purpose of providing an alternate route. TSM and TDM improvements were, however, included as part of the Shared Solution.		Based on updated traffic modeling, this alternative alone does not meet the primary project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. These improvements are, however, included as part of the Shared Solution.	

Alternative/Category	Screened Out in Final EIS and Reverified in Supplemental EIS Process	Analyzed in Detail in Final EIS and Reevaluated in Supplemental EIS Process	Evaluated and Screened Out in Supplemental EIS Process	Analyzed in Detail in Supplemental EIS
Mass Transit Only	This alternative alone does not meet the primary project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. WFRC long range plan mass transit improvements were, however, included as part of the Shared Solution.		A robust transit scenario was developed and included in the future baseline conditions for analysis of all Legacy Parkway alternatives.	
Expansion of I-15 Alternatives				
Ten-Lane I-15 with HOV Lanes	This alternative does not meet project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. It does not meet the project purpose of providing an alternate route. These I-15 improvements were, however, included as part of the Shared Solution.		Based on updated traffic modeling, this alternative does not meet the project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. It does not meet the purpose of providing an alternate route. These improvements are, however, included as part of the Shared Solution.	
Ten-Lane I-15 with Reversible Flow Lane			This alternative does not meet the project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. It does not meet the purpose of providing an alternate route. Operational inefficiencies would reduce effectiveness.	

Alternative/Category	Screened Out in Final EIS and Reverified in Supplemental EIS Process	Analyzed in Detail in Final EIS and Reevaluated in Supplemental EIS Process	Evaluated and Screened Out in Supplemental EIS Process	Analyzed in Detail in Supplemental EIS
I-15 Beyond Ten Lanes	Operational uncertainties, the number of interchanges involved, lack of high-volume feeder routes, safety and snow removal problems, and substantial relocation impacts make reconstructing I-15 beyond 10 lanes unreasonable.		The relocations and right-of-way costs for a horizontal expansion and the design and construction costs for a vertical expansion would be extraordinary. Operational inefficiencies would exist for a facility beyond 10 lanes.	
Maximum Future Transit (Plus Expansion of I-15 to Ten Lanes)	This alternative does not meet project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D.		Even with I-15 expanded to 10 lanes but no Legacy Parkway, maximum mass transit is projected to capture only 5.9 percent of demand. Based on updated traffic modeling, this alternative does not meet the project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D. These improvements are, however, included as part of the future baseline conditions for evaluating all Legacy Parkway alternatives.	
No-Build Alternative				
No-Build with WFRC Long Range Plan		This alternative does not meet project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D or providing an alternate route. However, it was analyzed in detail in the Final EIS.		This alternative does not meet project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D or providing an alternate route. However, it is analyzed in detail in the Supplemental EIS

Legacy Parkway Alternatives

Alternative/Category	Screened Out in Final EIS and Reverified in Supplemental EIS Process	Analyzed in Detail in Final EIS and Reevaluated in Supplemental EIS Process	Evaluated and Screened Out in Supplemental EIS Process	Analyzed in Detail in Supplemental EIS
Alternative A		This alternative was analyzed in detail in the Final EIS.		This alternative was modified to a narrower right-of-way and analyzed in detail in the Supplemental EIS.
Alternative B		This alternative was analyzed in detail in the Final EIS.		This alternative was modified to a narrower right-of-way and analyzed in detail in the Supplemental EIS.
Alternative C		This alternative was analyzed in detail in the Final EIS.		This alternative was modified to a narrower right-of-way and analyzed in detail in the Supplemental EIS.
Alternative D (Final EIS Preferred)		This alternative was analyzed in detail in the Final EIS. It was the lead agency and project proponent Preferred Alternative.		This alternative was dropped from further consideration. However, the impacts of Alternative D are presented in the Supplemental EIS for comparison purposes.
Alternative E				This alternative was developed for the Supplemental EIS and analyzed in detail. It follows the Alternative D alignment, but has a narrower right-of-way.

Alternative/Category	Screened Out in Final EIS and Reverified in Supplemental EIS Process	Analyzed in Detail in Final EIS and Reevaluated in Supplemental EIS Process	Evaluated and Screened Out in Supplemental EIS Process	Analyzed in Detail in Supplemental EIS
Legacy Parkway Integrated with Mass Transit				This alternative was developed for the Supplemental EIS and is analyzed in detail.
Alternative Construction Sequence of Legacy Parkway with the Shared Solution			Sequencing Scenarios 1 and 2 were analyzed and eliminated because they do not meet the project purpose and need as reflected by failure to reduce congestion on I-15 to LOS D.	Sequencing Scenarios 3 and 4 are consistent with the project purpose and need.
Parkway Facility Adjacent to Redwood Road			This alternative was eliminated based on high number of impacts on Section 4(f) properties that could be avoided by other alternatives.	
Six-Lane Legacy Parkway			This alternative was eliminated because the additional capacity is not warranted to meet the project purpose and need. Given the additional costs and environmental impacts, it would not provide much additional relief to I-15.	
Legacy Parkway without a Trail	The trail component of Legacy Parkway was included to support the project purposes of reducing congestion and providing an alternate route with an alternative transportation mode.		This alternative was eliminated because the trail component of the project contributes to achievement of the purpose and need as a multi- modal option of meeting the local transportation needs.	

Alternative/Category	Screened Out in Final EIS and Reverified in Supplemental EIS Process	Analyzed in Detail in Final EIS and Reevaluated in Supplemental EIS Process	Evaluated and Screened Out in Supplemental EIS Process	Analyzed in Detail in Supplemental EIS
D&RG 1			This alternative was considered unreasonable based on community impacts, very high impacts on existing development, and cost.	
D&RG 2			This alternative was considered unreasonable based on community impacts, very high impacts on existing development, and cost.	
D&RG 3			This alternative was considered unreasonable based on community impacts, very high impacts on existing development, and cost.	
D&RG 4			This alternative was considered unreasonable based on community impacts, very high impacts on existing development, and cost.	
D&RG 5			This alternative was considered unreasonable based on community impacts, very high impacts on existing development, and cost.	